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JUL 17 2007
PATENT & TRADEMARK OFFICE

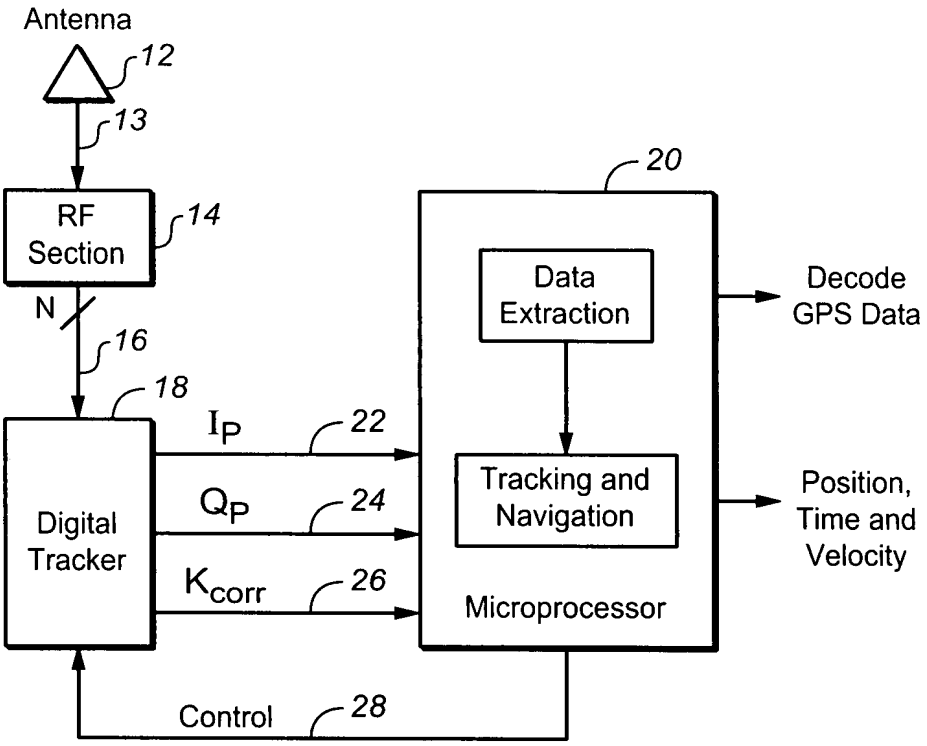


FIG. 1

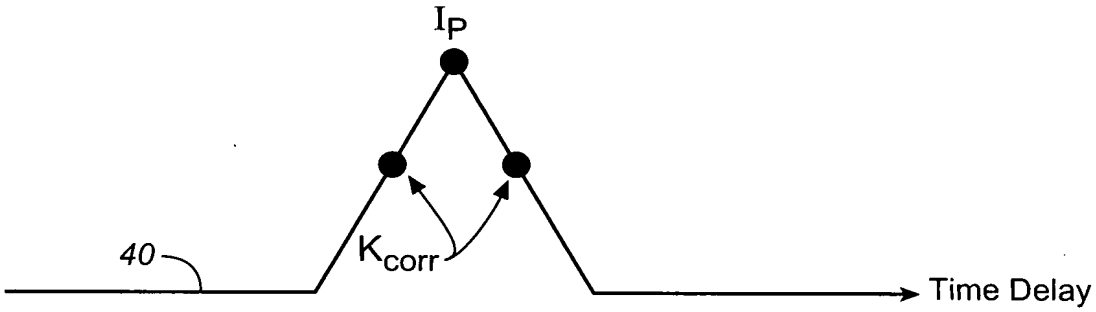


FIG. 2a

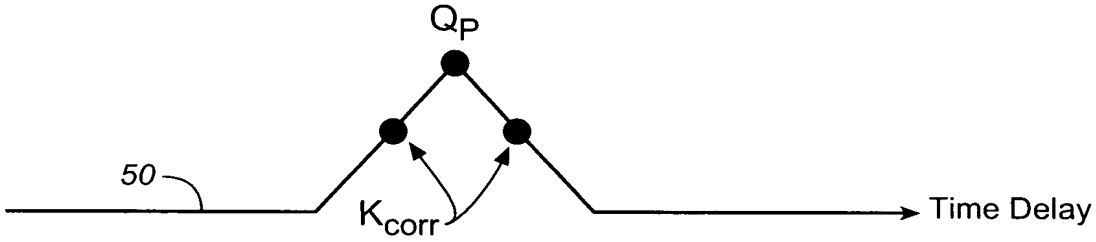


FIG. 2b

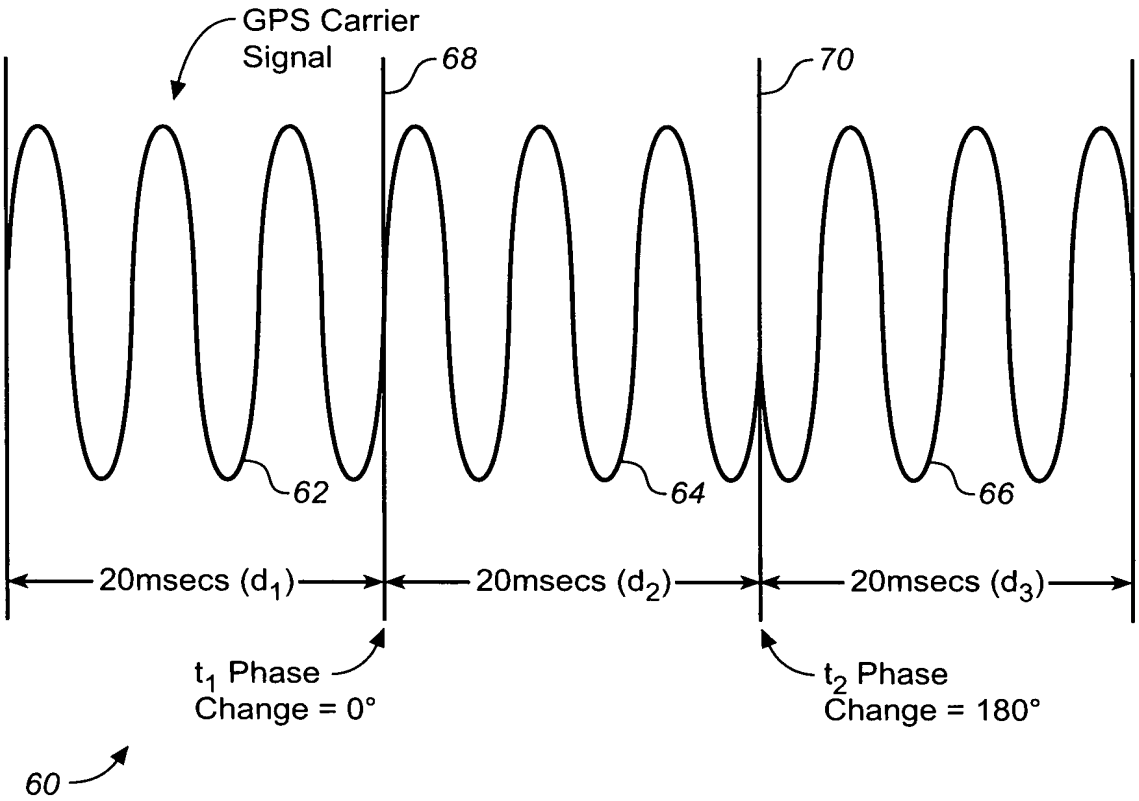

GPS Carrier Signal
68
70
62
64
66
20msecs (d_1)
20msecs (d_2)
20msecs (d_3)
t_1 Phase Change = 0°
t_2 Phase Change = 180°
60

FIG. 3

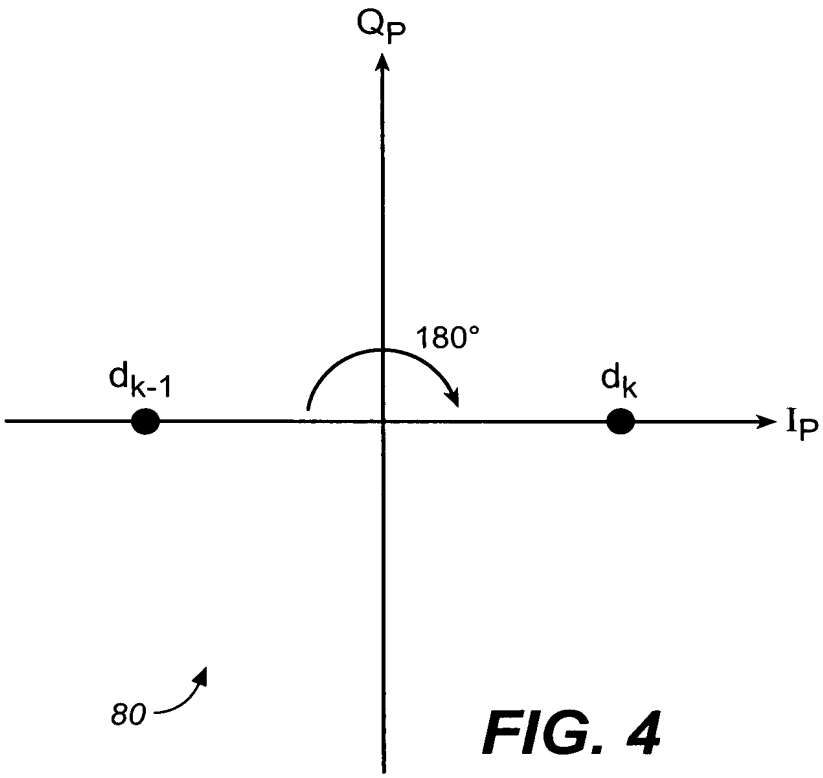


FIG. 4

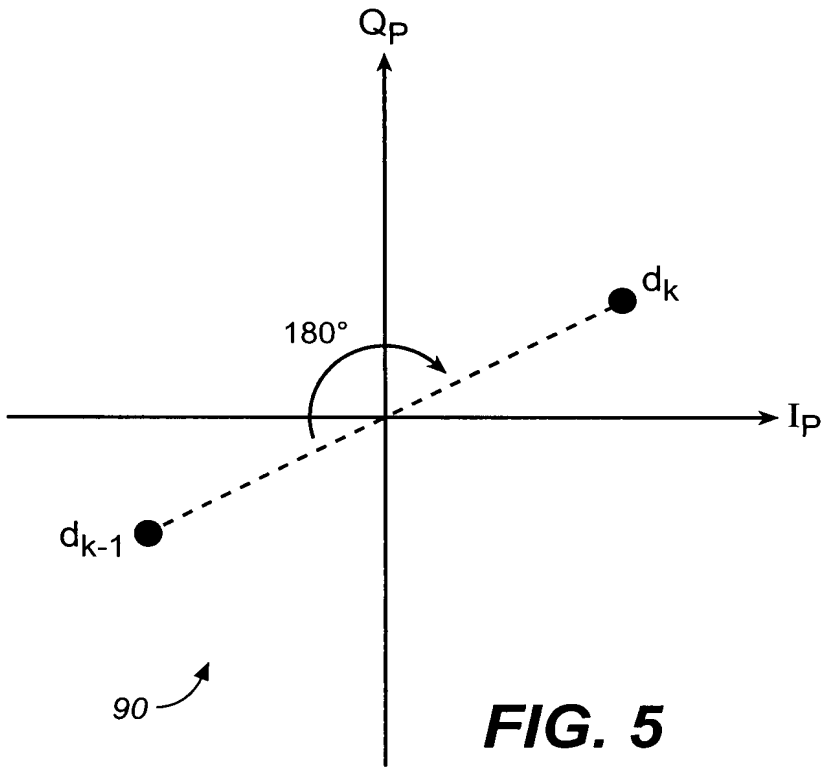


FIG. 5

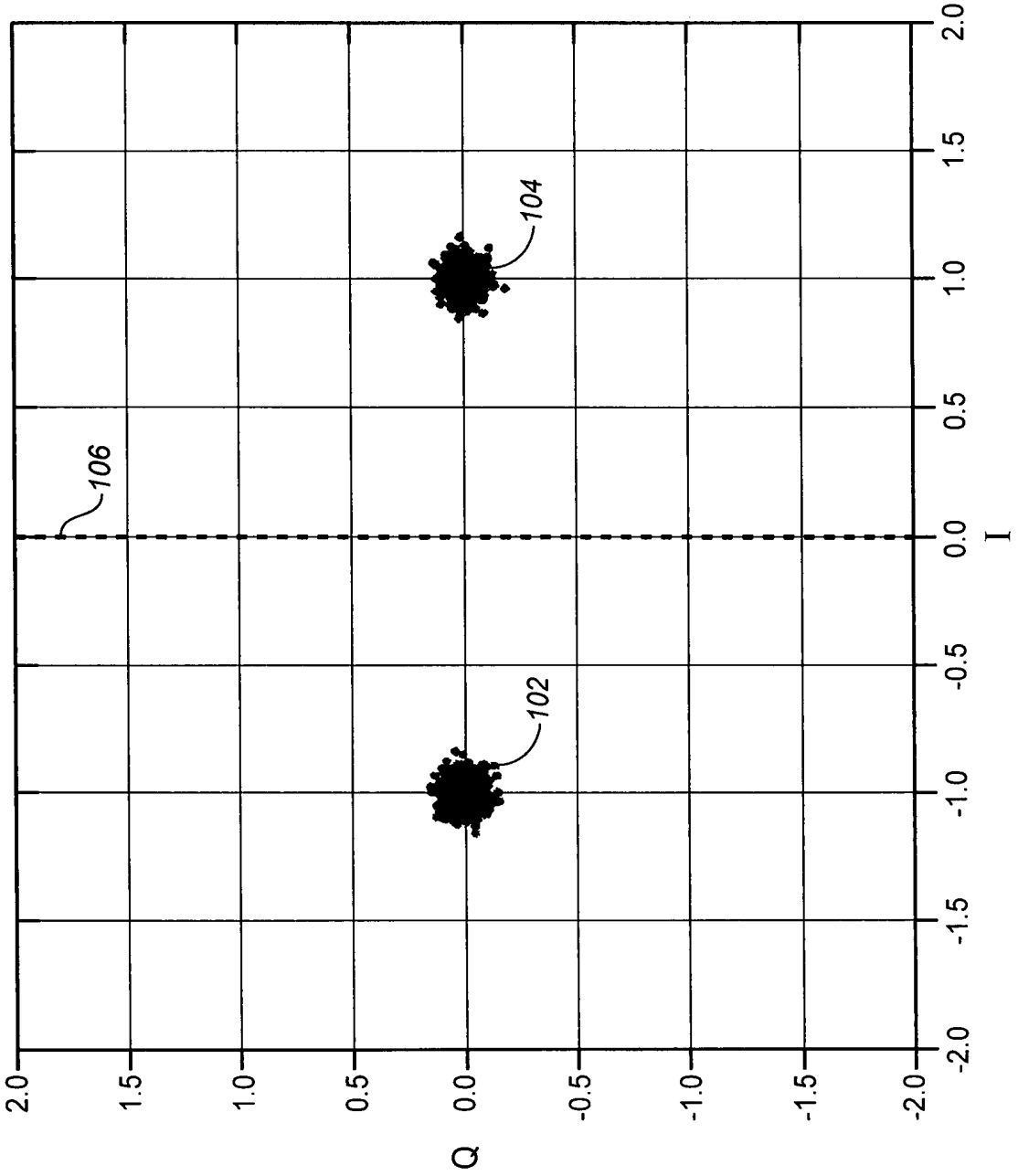


FIG. 6a

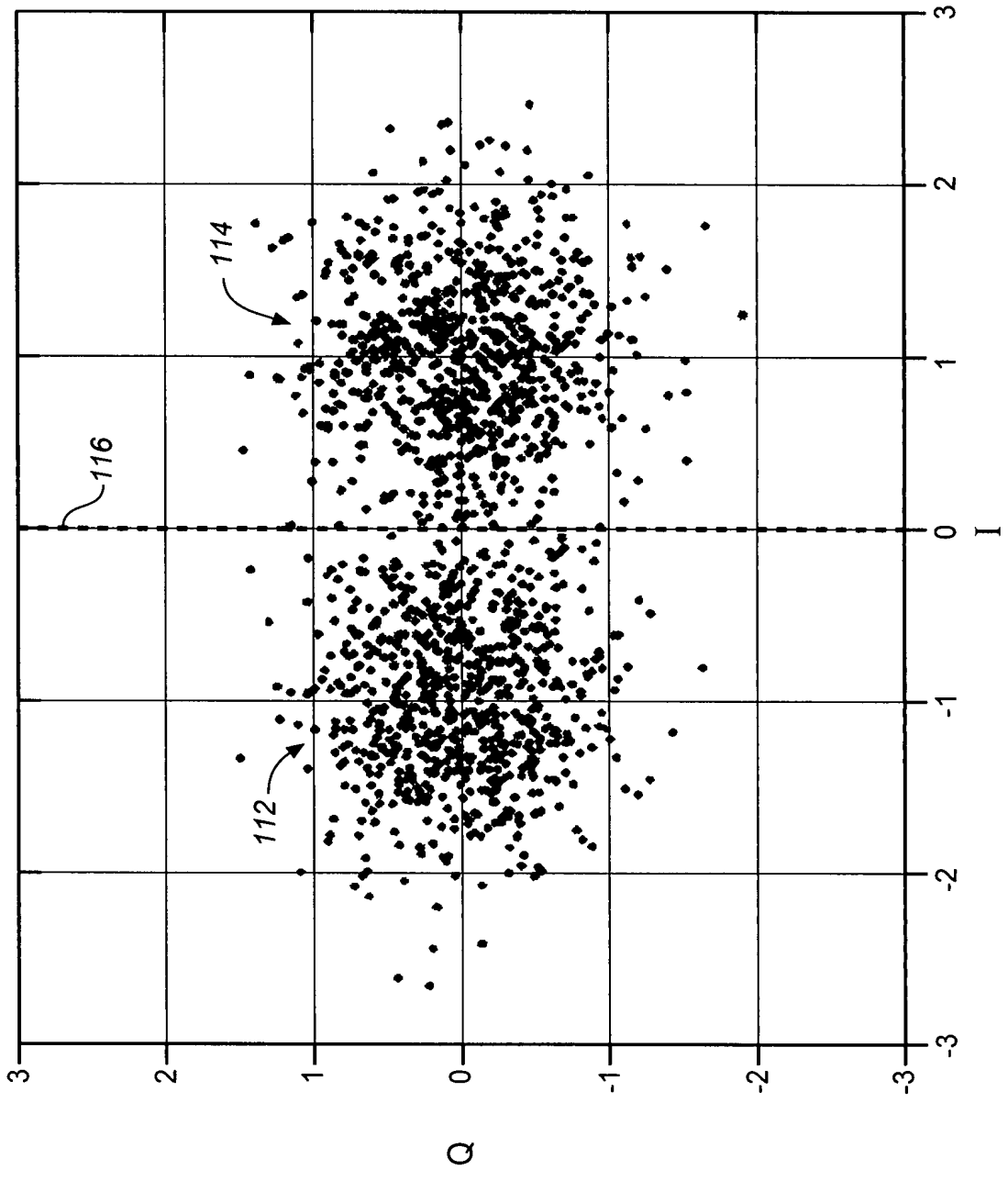


FIG. 6b

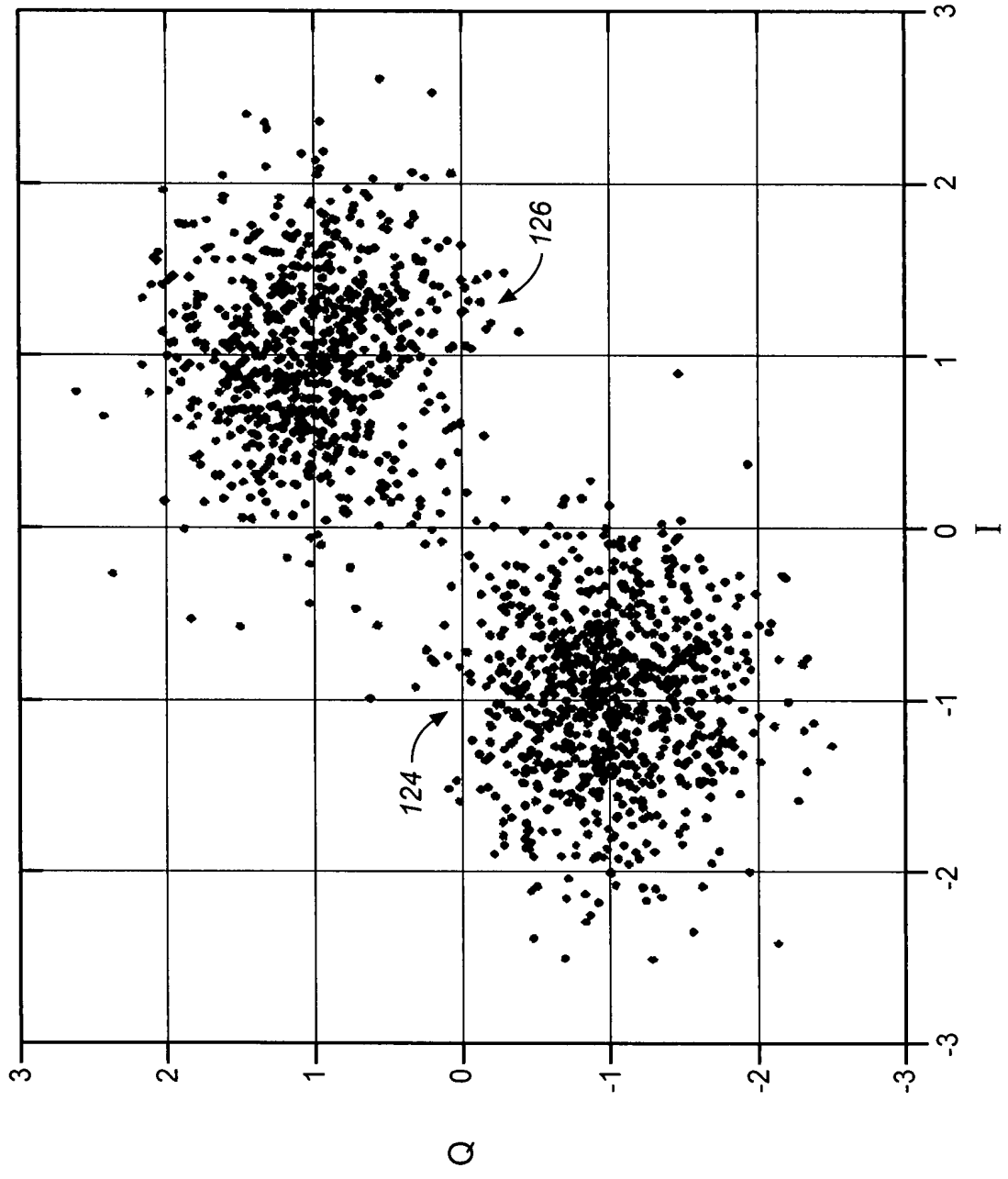


FIG. 7

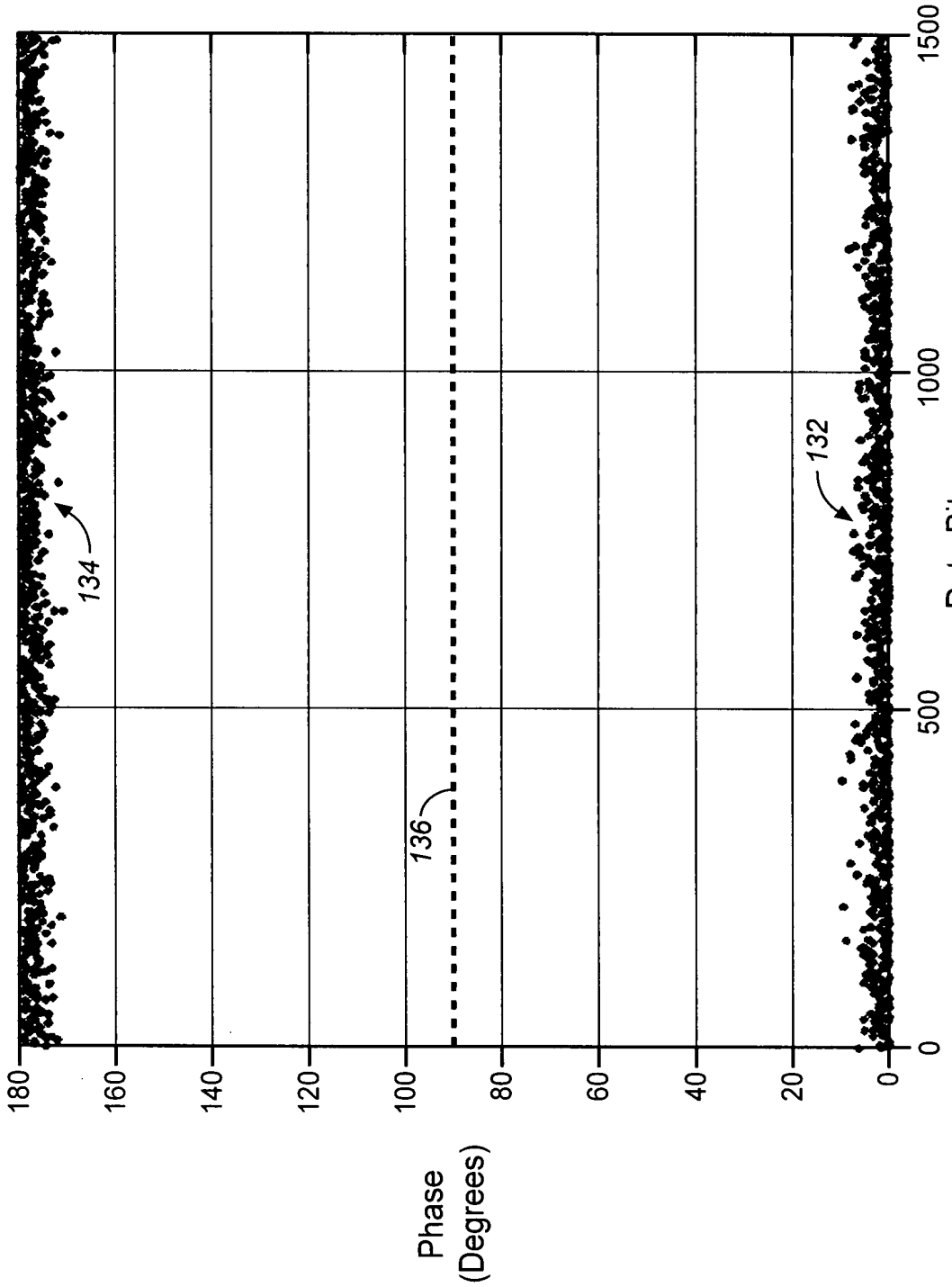

Phase (Degrees)
180
160
140
120
100
80
60
40
20
0
0
500
1000
1500
Data Bits
134
132
136
130

FIG. 8a

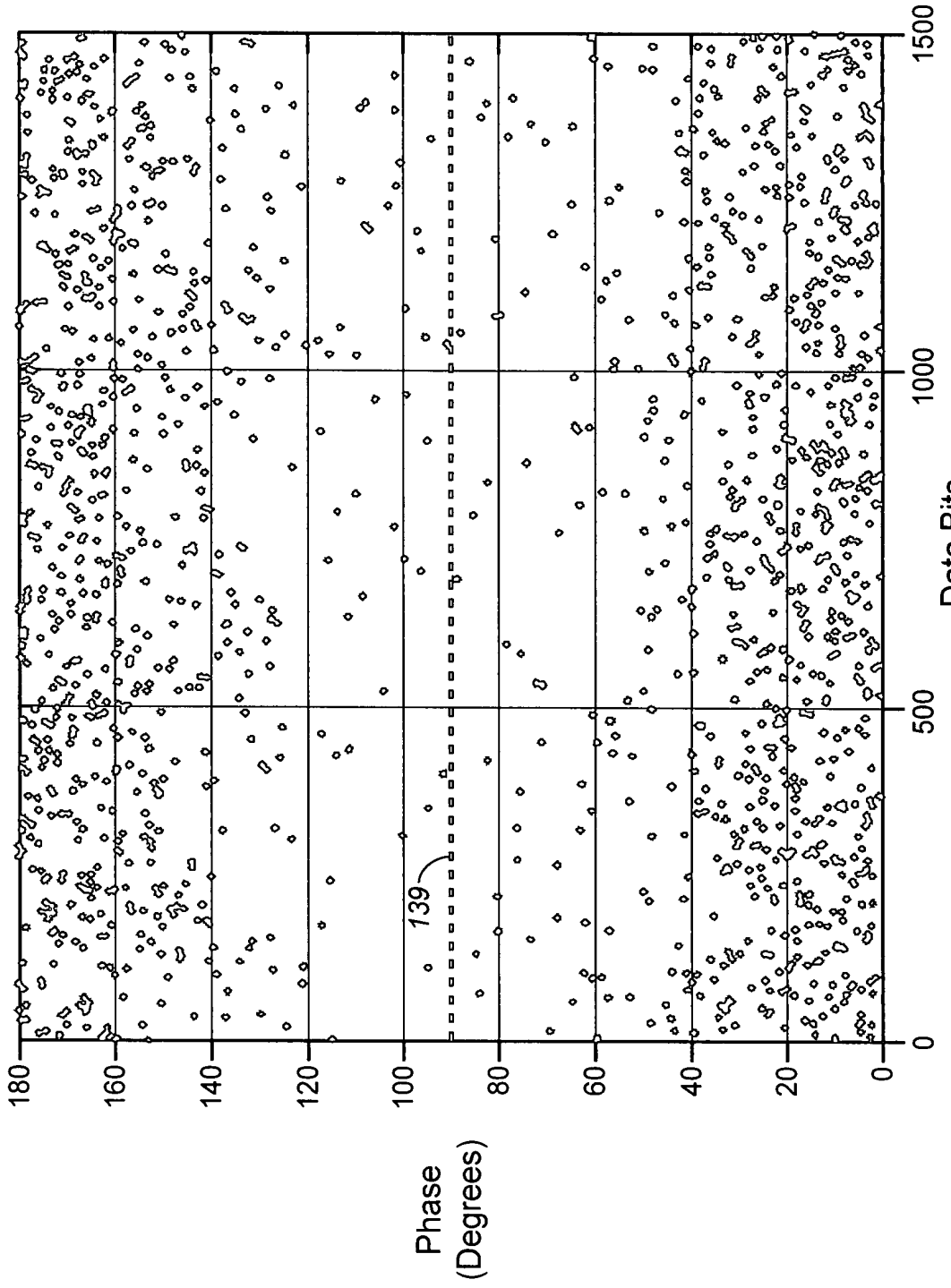

Phase (Degrees)
180
160
140
120
100
80
60
40
20
0
0
500
1000
1500
Data Bits
139
138

FIG. 8b

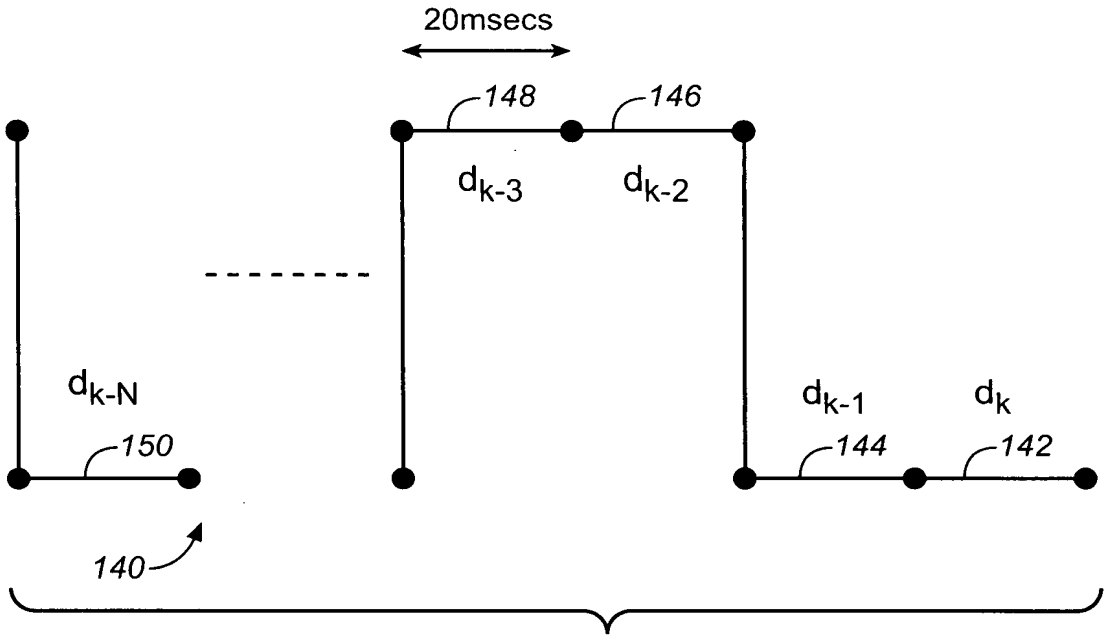

20msecs
148
146
d_{k-3}
d_{k-2}
d_{k-N}
150
d_{k-1}
144
d_k
142
140

FIG. 9

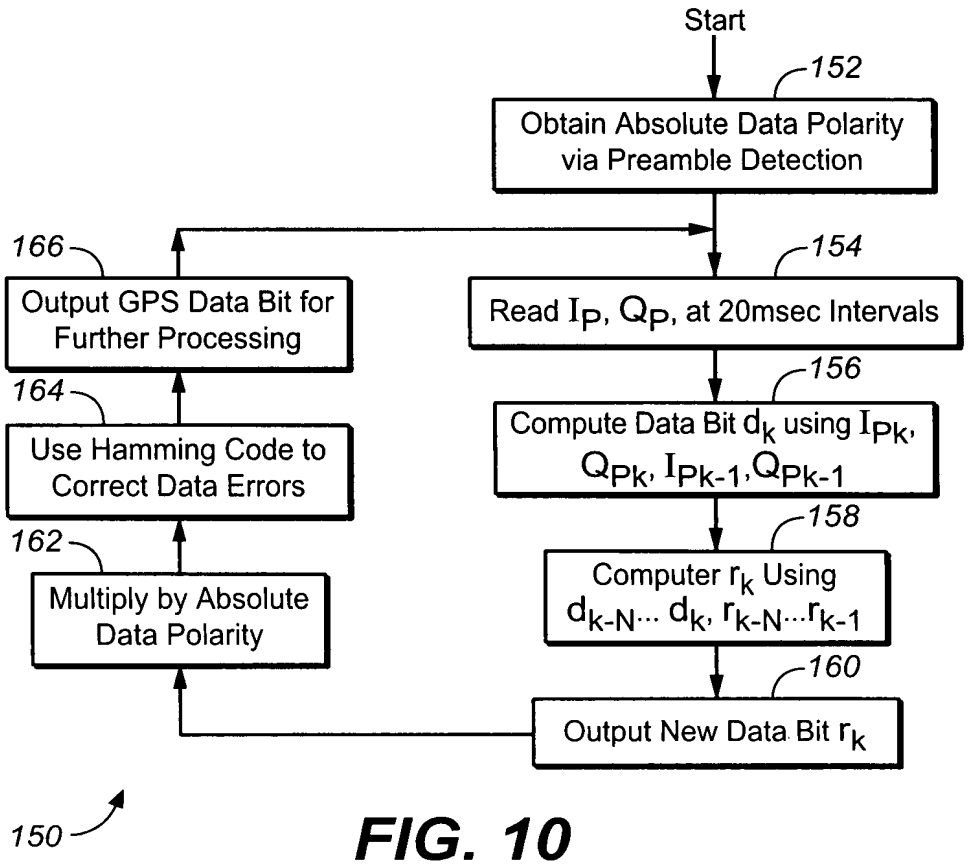

Start
152
Obtain Absolute Data Polarity via Preamble Detection
154
Read I_P, Q_P, at 20msec Intervals
156
Compute Data Bit d_k using I_{Pk}, Q_{Pk}, I_{Pk-1}, Q_{Pk-1}
158
Computer r_k Using d_{k-N}... d_k, r_{k-N}...r_{k-1}
160
Output New Data Bit r_k
162
Multiply by Absolute Data Polarity
164
Use Hamming Code to Correct Data Errors
166
Output GPS Data Bit for Further Processing
150

FIG. 10

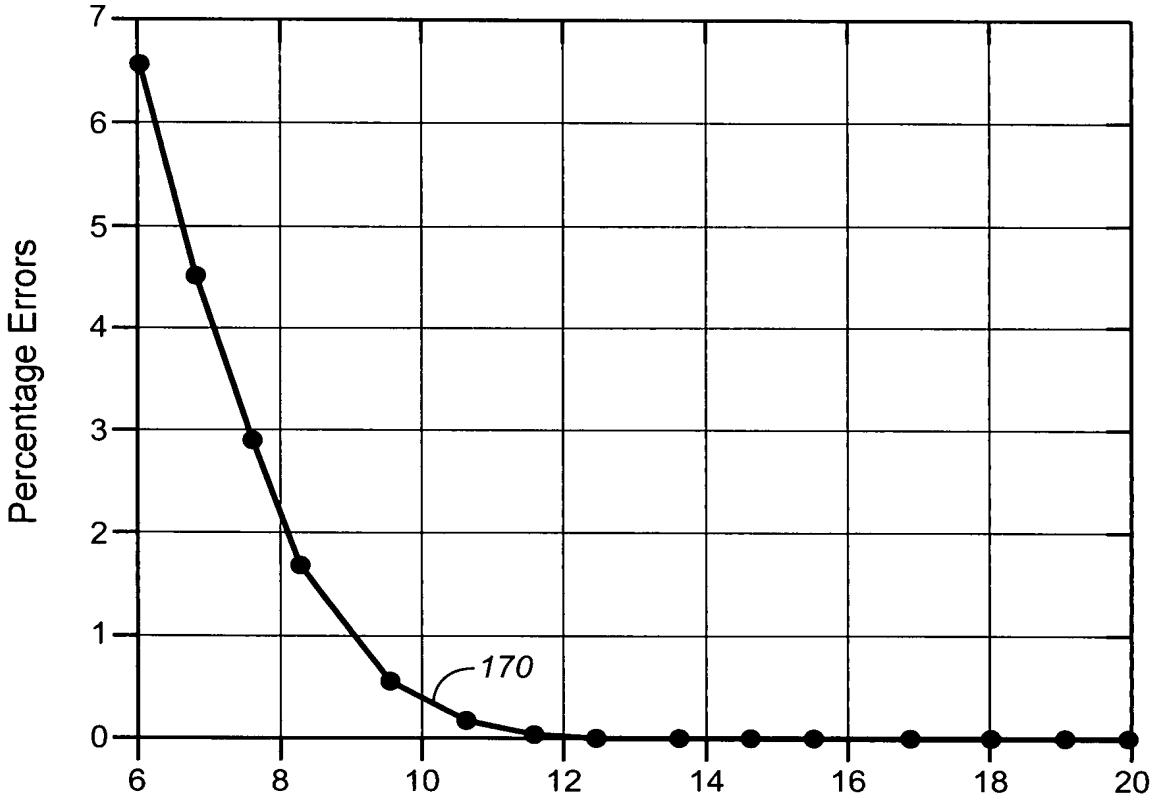


FIG. 11a

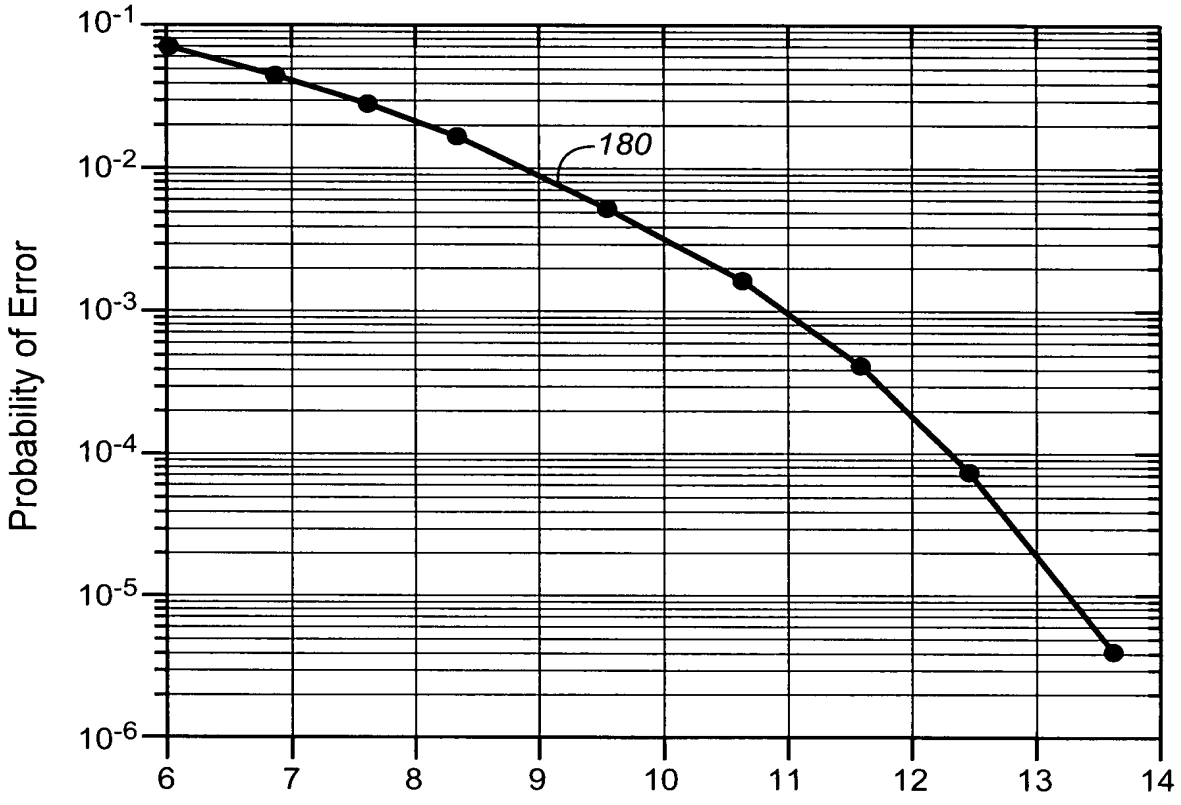
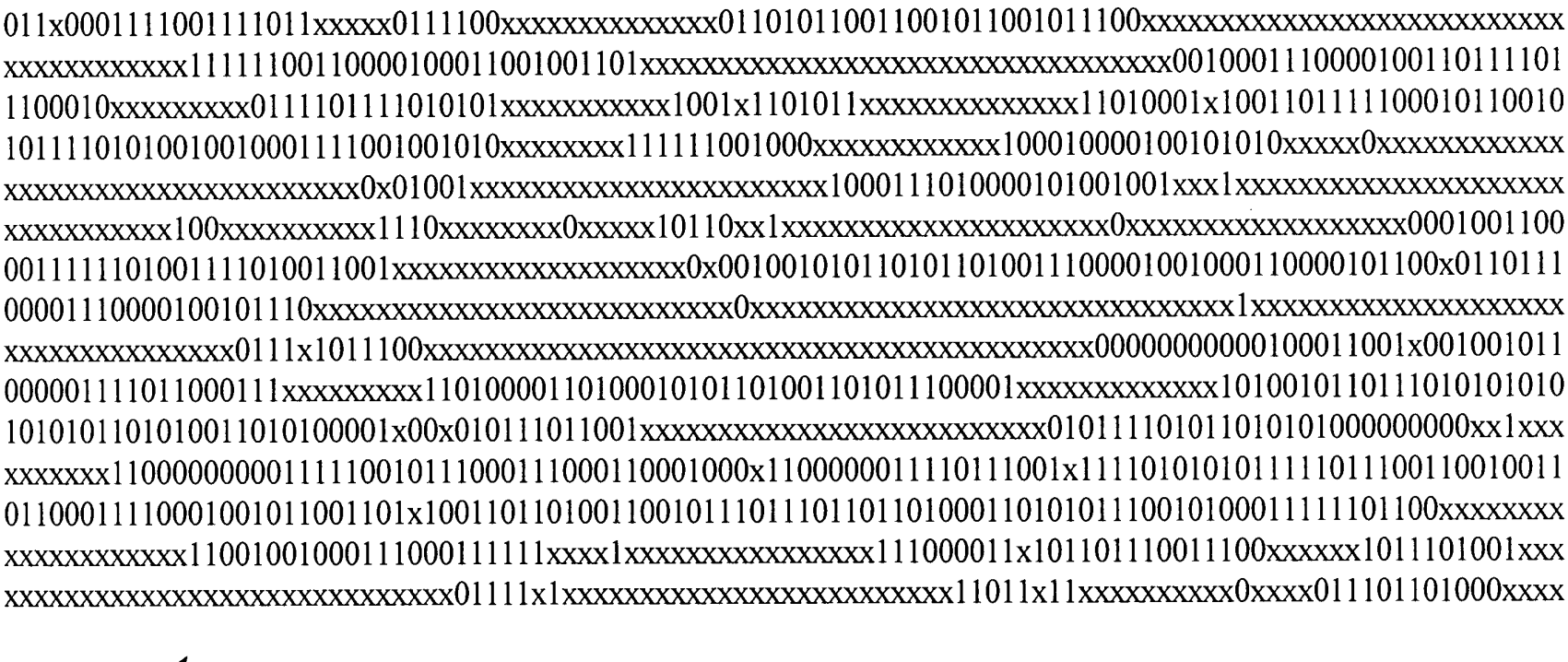


FIG. 11b


011x0001111001111011xxxxx0111100xxxxxxxxxxxxxxx0110101100110010110010111100xxxxxxxxxxxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxx1111110011000010001100100110 1xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx0010001110000100110111101
1100010xxxxxxxxx0111101111010101xxxxxxxxxx1001x1101011xxxxxxxxxxxxxx11010001x1001101111100010110010
1011110101001001000111100100101 0xxxxxxxx111111001000xxxxxxxxxxx1000100001001010xxxxx0xxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxxxx0x01001xxxxxxxxxxxxxxxxxxxxxxx1000111010000101001001xxx1xxxxxxxxxxxxxxxxxxx
xxxxxxxxxx100xxxxxxxxx1110xxxxxxx0xxxxx10110xx1xxxxxxxxxxxxxxxxxxxx0xxxxxxxxxxxxxxxxx0001001100
0011111101001111010011001xxxxxxxxxxxxxxxxxx0x00100101011010110100111000010010001100001011 00x0110111
0000011100001001011 0xxxxxxxxxxxxxxxxxxxxxxxxxxxx0xxxxxxxxxxxxxxxxxxxxxxxxxxxxxx1xxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxx0111x1011100xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx0000000000100011001x001001011
0000011110110001 11xxxxxxxx1101000011010001010110100110101110001xxxxxxxxxxxxx10100101101110101010101
1010101101010011010100001x00x01011101100 1xxxxxxxxxxxxxxxxxxxxxxxxxx0101111010110101010000000000xx1xxx
xxxxxxx1100000000011111001011100011100011000 1000x1100000011110111001x1111010101011111011100110010011
0110001111000100101100 1101x1001101101001100101110111011011010001101010111001010001111110 1100xxxxxxxx
xxxxxxxxxxxx1100100100011100011111 1xxxx1xxxxxxxxxxxxxxxx111000011x1011011100111 00xxxxxx1011101001xxx
xxxxxxxxxxxxxxxxxxxxxxxxxxxxxx01111x1xxxxxxxxxxxxxxxxxxxxxxxxxx11011x11xxxxxxxxxx0xxxx011101101000xxxx

190

FIG. 12a

0111000111100111101100010011110001101111110000011010110011001011100x10100100100101111010110011100
1100101000111111111001100001000110010010100000111011010000011101111001000011100001001101111101
110001x1111100l1x011110111101010111101000011100l1x110101101100111101000l1x100110111110000101100010
101111101010010010001111x00100101001011000l1x1111100100001011000100100001001010101100011x11000000l011
111101001000010101111001x00100101111110x10101011010000100011101000010100100l1x10x1111110000011111000000
010110101011111100x00111101011100000010100010100110101100100111101x11001111100011101000001001100
001111110100111101001100111010001001100x00100101011010111000100000011001100001110000101100x0110111
000011100001001011100101010010010100111010011000000011001100001110101100111x11101101101100000001
111111101100010011100010001011010111100100111101100100000000000100011001x00100l011
000011110110x0111x00101011x11010000110100101011100000x10101011000011010011101110101010010
101010110101001101010100001x00x0101110110010000111110000100011100111x10111101010110101000000000x01x110
000010x1100000000011111001011100011000100011x1100000011101110110101010111111010101111001100100011
011000111110001001010110011011x10011011010011001101101011101010100011101110101010001111111011001101010001
101001010100110010001000111111100x11010111011001001111100001l1x10110111001111001x01101101110100111110
001001101010111110111010011100111111x11011111111110001110010000011011x11000111011010000000

200

FIG. 12b

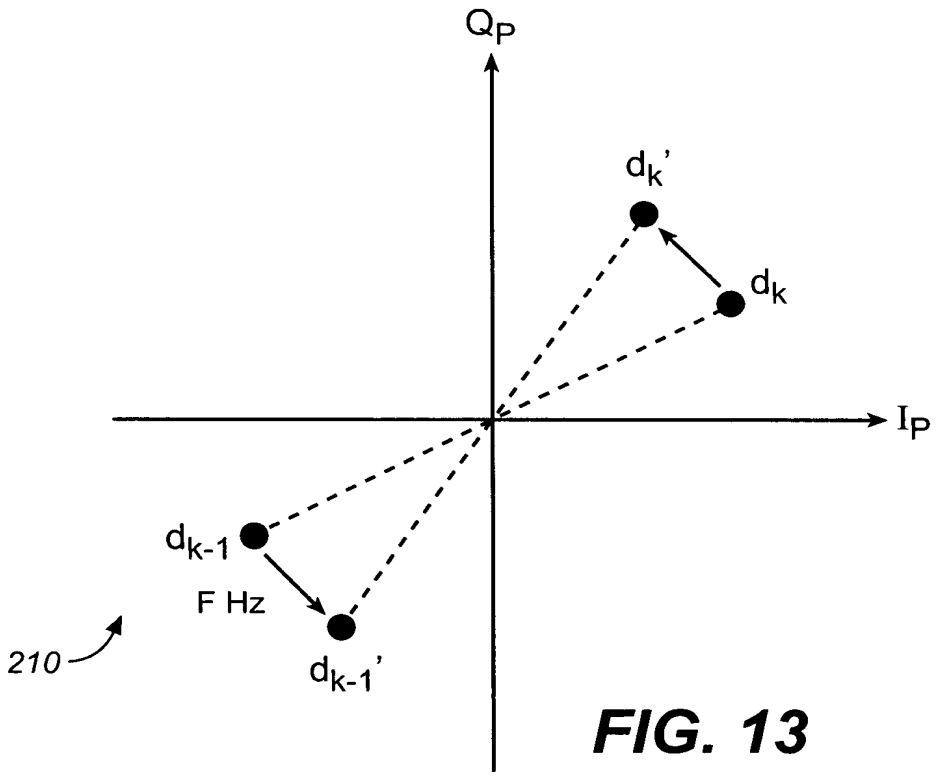


FIG. 13